

WHAT IS CLAIMED IS:

1. A trapping detection device of an opening/closing member, comprising:  
a motor for actuating the opening/closing member in an opening/closing  
5 direction;  
a speed detection means for detecting a rotation state of the motor;  
a control means for detecting the trapping during an operation of the  
opening/closing member based on an information sent from the speed detection  
means and for driving the motor in a reverse direction when the trapping is  
10 detected;  
a voltage detection means for detecting a drive voltage applied to the motor for  
driving the motor;  
an actual speed decision means for deciding the actual speed of a rotation of  
the motor by the speed detection means;  
15 an estimated speed calculation means for calculating the estimated speed of  
the rotation of the motor based on the drive voltage;  
an estimated speed storage means for storing the estimated speed for a first  
predetermined time;  
an estimated speed correction means for correcting the estimated speed based  
20 on a difference between the actual speed and the estimated speed obtained  
before the first predetermined time;  
a trapping determination means for determining the trapping in the  
opening/closing member based on a change state of a difference between the  
estimated speed being corrected and the actual speed.

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2. A trapping detection device of an opening/closing member according to claim 1, wherein the trapping determination means determines the trapping state when the difference between the estimated speed being corrected and the actual speed exceeds a first predetermined threshold value.

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3. A trapping detection device of an opening/closing member according to claim 2, wherein the trapping determination means includes a high-pass filter for filtering based on the difference between the estimated speed being corrected and the actual speed and determines the trapping state when a filtered value after passing through the high-pass filter exceeds a second predetermined threshold value.

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4. A trapping detection device of an opening/closing member according to claim 3, wherein the speed detection means includes a motor rotation sensor for outputting a pulse signal synchronized to the rotation of the motor to the control means.

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5. A trapping detection device of an opening/closing member according to claim 4, wherein the actual speed decision means detects the actual speed of the rotation of the motor based on a number of a rising edge or a falling edge of the pulse output from the motor rotation sensor detected within a predetermined time period.

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6. A trapping detection device of an opening/closing member according to claim 5, wherein the difference between the actual speed and the estimated speed

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obtained before the first predetermined time is applied to correct the estimated speed when a second predetermined time is elapsed after the drive voltage is applied to the motor.

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